

Density: Review Density Asphalt Cores QC

Objectives

- Asphalt Core QC Samples Overview
- Familiarization with data entry and display windows
 - Enter QC Asphalt Core Lots
 - Retrieve/Review Existing QC Asphalt Core Lots
 - Delete Existing QC Asphalt Core Lots

About Asphalt Core QC Density

On the job site, the contractor takes QC asphalt core samples. These samples are taken to the producer's facility and the producer test's them there. The producer records these results on to the state's QC-5 form. Within 24 hours of the sample being taken, the test results are delivered on the QC-5 form to the state's RE personnel. They are also faxed to the state's QA lab. The results are then reviewed and filed.

This portion of the densities module will provide that same functionality in HiCAMS. Once the results are received from the producer on the QC-5 form, the RE office personnel will enter the results into HiCAMS in the window provided (see below for screen shot and field descriptions). HiCAMS will review certain aspects of the results to ensure they conform to the HMA/QMS program. If results are entered that do not conform, the RE will be notified. The results will also be made available for the QA lab personnel to review them online for correlation with corresponding QA results.

Overview

The Asphalt Core QC Density module of HiCAMS provides tracking and logging of QC asphalt core density test results in a centralized location. It also helps to ensure the conformance of HMA/QMS standards. This functionality includes, but is not limited to:

- Logging of all QC asphalt core density test results for a project
- Evaluating QC test results to determine if they conform to certain HMA/QMS standards
- Notifying the appropriate individuals if the test results do not conform to the HMA/QMS standards being monitored

Authorized Users

The staff members who will have the ability to create, verify and update QC Asphalt Core Density records are:

- RE personnel
- The staff members who will have the ability to view QC Asphalt Core Density records are:
- All staff

Review Density Asphalt QC Cores (Header and Lot Tab Navigation)

This is the window used for entering and reviewing Asphalt Core QC Density data:

Fields

- **Contract:** The HiCAMS contract number. Entered by user or selected from the Contract Selection window when the selection icon is clicked. **REQUIRED.**
- **Contractor:** Contractor firm name for the selected contract. Provided by HiCAMS.
- **Work Order:** The primary work order number for the selected contract number. Provided by HiCAMS.
- **Status:** Current status of the contract.
- **Placed Date:** Date material was placed on the project, regardless of date sample was taken. Entered by user. **REQUIRED.**

- **JMF:** The Job Mix Formula number for the sample. Entered by user or selected from the JMF Selection window when the selection icon is clicked. REQUIRED.
- **Material:** A list of asphalt materials available on the contract selected.
- **“Retrieve” (button):** When pressed, the test sections for the entered contract, date placed, JMF, lot number and control strip been entered will be retrieved and displayed.
- **Contract:** Enter contract number associated with core lot.
- **Placed Date:** Provided by HiCAMS based upon date entered by user on the lot selected in the top portion of the window.
- **Contract Line Item:** Using the drop down list, select the valid line item based upon the material contained in the selected JMF, and the CBOM.
- **JMF:** Provided by HiCAMS based upon date entered by user on the lot selected in the top portion of the window.
- **JMF Min. % Comp.:** Provided by HiCAMS based upon the JMF selected in the top portion of the window.
- **Material:** (aka Mix Type). The description of the material (aka mix type) used in the JMF for the line where the user’s cursor is currently located. This field is updated each time the user moves to a line with a different sample. It is based on the JMF and if no JMF has been entered, it will be blank. Provided by HiCAMS.
- **Lot:** Lot number for this contract for this JMF on the given Date Placed. Provided by HiCAMS.
- **Approved Producer:** The name of the producer of the JMF for the line where the user’s cursor is currently located. This field also includes the plant at which the JMF was produced. This field is updated each time the user moves to a line with a different sample. It is based on the JMF and if no JMF has been entered, it will be blank. Provided by HiCAMS.
- **Lot Construction** (radio buttons): Select either
- **Paving Contractor:** Using the Vendor icon, select the contractor from the **Contractor Selection** window.
- **Lot Completed (radio button):** Provided by HiCAMS, the field will display an “Open” status, until changed by the user to “Complete.”

Note: *Certain Lots cannot be completed by RE Staff. Lots that have one or more Substitution tests –or- a % compaction falling outside of the parameters (80% -110%) can only be completed by Pavement Construction personnel.*

- **Map:** Enter the Map/Route Number.
- **Lot Average:** The average of the lot, based upon the samples entered in the results tab. Only those tests with the “Include in Avg.” checkbox checked will be included.
- **Roadway Technician:** The roadway technician’s HiCAMS certification number. If this number is not known, the user can click on the staff icon and select a Technician by name through the Technician Selection Window. REQUIRED.
- **Lot Status:** Assigned by HiCAMS depending upon the minimum % compaction of the associated JMF:
 - *Meets Specs* – If the lot average is greater than or equal to the minimum % compaction for the JMF.
 - *Does Not Meet Specs-Pay Adjustment* – If the lot average is less than the minimum % compaction for the JMF.
 - **NOTE:** *When a failing lot (that is marked as complete) is saved, a notification will be sent to the RE and Pavement Construction Specialist.*
- **Plant Technician:** The lab technician’s HiCAMS certification number. If this number is not known, the user can click on the staff icon and select a Technician by name through the Technician Selection Window. Entered by the user. REQUIRED.

Note: *A “generic” technician has been provided for selection in the event that the actual technician performing the test does not possess a valid certification. A comment is required when this technician is selected, and a notification is sent to the Pavement Construction Section.*

- **PAR** (button): If the lot fails, a Pay Adjustment Recommendation can be initiated using this button.
- **Void** (button): Once a lot has been saved, it cannot be deleted. Use this button to void the lot and enter the test results again, if desired.
- **Comment:** The comment is related to a lot. The comment field will display the latest comment. A comment will be required if a generic technician is specified, and the user attempts to save the record.

Review Density Asphalt QC Cores (Results Tab Navigation)

This is the window used for entering QC Asphalt Core test results:

Review Density Asphalt Cores QC (C105505)

Contract: C105505 Contractor: THE LANE CONSTRUCTION CORP. Work Order: 8.1370305 Status: Activated

Placed Date: 11/02/2001 JMF: 00-007-122 Material: Asphalt Concrete Base Course, Type HB - Tons

Retrieve

Include In Avg.	Core	Core Type	Station From	Station Fraction	Location	% Comp.
<input checked="" type="checkbox"/>	1 QC		32 +	00	RT LN	92.7
<input checked="" type="checkbox"/>	2 QC		00 +	80	LT	91.8
<input checked="" type="checkbox"/>	3 QC		4 +	05	LT	91.5
<input checked="" type="checkbox"/>	4 QC		20 +	55	LT	92.4
<input checked="" type="checkbox"/>	5 QC		26 +	00	LT	91.2

JMF Min. % Comp.: 92.00

Lot: 3

Construction: ☒ Other ☐ New

Lot Completed: ☐ Open ☒ Complete

Lot Average: 91.9

Lot Status: Does Not Meet Specs - Pay Adjustment

Comment:

Fields

- **Include In Avg.:** To include this core test in the average % compaction for the lot, check. Otherwise, click to leave blank.
- **Core:** The number of the core tested.
- **Core Type:** The type of core tested. Use the dropdown menu to select from the following:
 - *QC*
 - *Check QC* – The average of 3 core test results.
 - *Control Strip QC* – The multiple core tests that are used for nuclear gauge testing.
 - *Substitution QC* – The QA Lab may retest a producer's sample. If test results more adequate, will replace the original test results with QA results.
- **Station From:** The beginning station number for core test.

- **Station Fraction:** The additional distance from the beginning station number.
- **Location:** Any detailed information regarding the area where the core was taken.
- **% Comp.:** The test result for core.
- **JMF Min. % Comp.:** Calculated by HiCAMS as a “running total” as core tests are entered for the lot.
- **Lot:** Number as entered by user in Lot tab.
- **Lot Construction:** Use the radio buttons to indicate the type of construction.
- **Lot Completed:** Entered by HiCAMS. Will be remain “Open” until user clicks the “Complete” button on the Lot tab.
- **Lot Average:** Calculated by HiCAMS. Will be updated as core tests are entered for the lot
- **Lot Status:** Calculated by HiCAMS. Will be updated as core tests are entered for the lot.

Review Density Asphalt QA Cores (HistoryTab Navigation)

This is the window used for viewing QC Asphalt Core test results changes/corrections/updates:

Review Density Asphalt Cores QC (C105505)

Contract: C105505 Contractor: THE LANE CONSTRUCTION CORP. Work Order: 8.1370305 Status: Activated

Placed Date: 11/02/2001 JMF: 00-007-122 Material: Asphalt Concrete Base Course, Type HB - Tons Retrieve

Lot Results History

Lot:

Action	Action Date	Status	Who	Comment
Create	11/02/2001 12:58:00	Meets Specs	Brite, Thomas E	dsadssa

Test Results:

Action	Action Date	Core	Core Type	Who	Comment
Create	11/02/2001 12:58:00	1	QC	Brite, Thomas E	
Create	11/02/2001 12:58:00	1A	QC Control	Brite, Thomas E	
Create	11/02/2001 12:58:00	1A	QC Substit	Brite, Thomas E	
Create	11/02/2001 12:58:00	1A	QC Check	Brite, Thomas E	
Modify	11/02/2001 14:44:00	1A	QC Substit	Poindexter, David A	
Create	11/02/2001 14:47:00	2	QC	Poindexter, David A	

☒ Show History For All Tests

Fields: Lot (top section)

- **Action:**
 - *Create* – A new lot was entered
 - *Comment* – A comment was added to an existing sample
- **Action Date:**
- **Status:** Displays the sample status resulting from the action performed.
- **Who:** The full name of the user performing the action.
- **Comment:** The comment associated to the selected history record.




Fields: Test Results (bottom section)

- **Action:** Indicates the action taken that caused the entry into the history:
 - *Create* – A new test was entered.
 - *Modify* – Data for an existing test was modified
 - *Comment* – A comment was added to an existing sample
 - *Delete* – A sample was deleted
- **Action Date:** This is the date the action was performed in HiCAMS.
- **Core:** The test number as entered.
- **Core Type:** The test type being updated.
- **Who:** The full name of the user performing the action.
- **Comment:** The comment associated to the selected history record.

Enter Asphalt Core QC Samples/Lot

Step 1: From the menubar, select **Functions® Density® Review Density Asphalt Cores QC**

The **Review Density Asphalt Cores QC** entry window displays.

- Step 2:** Enter the **Contract** number. If the contract number is unknown, click the book button next to the Contract entry field  to search for the contract number.
- Step 3:** Enter the **JMF**. If the JMF you entered is not found in HiCAMS, the “JMF Selection Window” will be opened and you can select a JMF from this window. If the JMF is unknown, click the button next to the JMF entry field; this displays the “JMF Selection Window” .
- Step 4:** Enter the **Material** (aka Mix Type) by selecting it from the drop-down list. If you don't find the material tested, then it is currently not listed in the CBOM for the contract number entered. (See Chapter 4, Section 7 for adding items to the CBOM). You can also use the Material Selection window to search. .
- Step 5:** Click **Retrieve**.

Note: Once the user selects a material, HiCAMS will retrieve:

- All pertinent information related to the contract and mix type
- All existing QC cores for that contract and mix type

Any existing cores will be displayed in the top portion of the window. Additionally, the following data will be displayed in based upon data entered in the top portion of the window:

- Placed Date
- JMF Number
- JMF Min % Comp.
- Lot Completed (will remain “Open” until “Completed”).
- Lot Average (will be blank until test results entered).
- Lot Status (will be blank until test results entered).
- Material
- Approved Producer

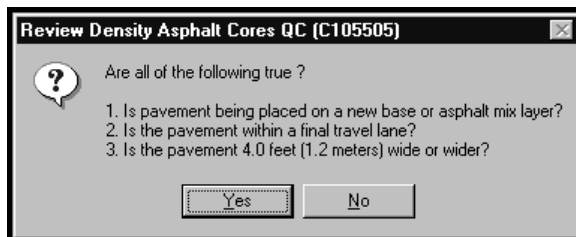
To begin entering the test results, you must first enter the Lot information in the lower portion of the window:

Step 6: Select the **Contract Line Item** using the drop down list.

Note: *This list will be limited to those line items that contain the material selected.*


Step 7: Indicate the **Lot Construction** status.


Note: *If “New” selected, a message will display:*



Step 8: Select the **Paving Contractor** using the Contractor Selection window (click the Vendor icon).

Step 9: Enter the **Map**/Route number.

Step 10: Enter the number of the **Roadway Technician** that took this QC sample. If this number is unknown, you can click on the staff icon  to display the “Technician Selection Window”.

Step 11: Enter the number of the **Lab Technician** that performed the tests on this QC sample. If this number is unknown, you can click on the staff icon  to display the “Technician Selection Window”.

Step 12: **Save** the data you entered by clicking on the save icon. 

Step 13: To begin entering test results, click the **Results** tab.

Step 14: A blank row will appear. The “**Include In Avg.**” checkbox will always default to checked. If you do not want the test entered to be included in the average for the lot, remove the check.

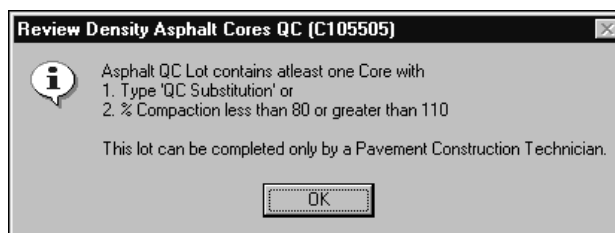
Step 15: Enter the **Core** sample number.

Note: See the section titled “**Numbering Core Samples**” in this chapter for detailed instructions on entering samples in HiCAMS

Step 16: Select the **Core Type** from the drop down list:

- QC
- Check QC
- Control Strip QC
- Substitution QC

Note: The Pavement Construction Specialists will be sent a notification each time a Substitution test is entered into HiCAMS. Lots containing QC Substitution types must be “Completed” by Pavement Construction:



Step 17: Enter the **Station From** and **Station Fraction**.

Step 18: Enter a description of the **Location**.

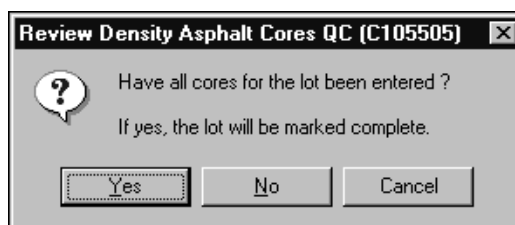
Step 19: Enter the actual % **Compaction**.

Repeat above steps to enter up to 25 samples per Lot.

Note: The Lot average will change as the samples are entered.

Tip: To enter additional lots for the same date and JMF (but placed by a different crew), return to the **Lot** tab and insert a new row.

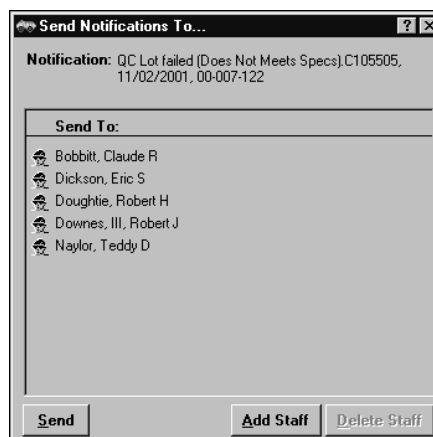
Step 21: Click **Save**. A message will appear:



Click Yes if complete. If no, click No and the Lot will remain “Open”.

Note: *If the lot fails and there is a possibility that Check Cores will need to be entered, it is best to allow the lot to remain “Open”. This is due to the fact that when a failing lot is marked “Complete”, a Pavement Section Specialist must be contacted to re-open it to enter the Check Cores.*

When a failing Lot is completed, a Send Notification window will display:



Note: *Once the tests have been completed for a Lot, HiCAMS will change the **Lot Completed** radio button to Complete, and the test sections cannot be updated.*

On failing lots, you may recommend a **Pay Adjustment**:

Review Density Asphalt Cores QC (C105505)

Contract: C105505 Contractor: THE LANE CONSTRUCTION CORP. Work Order: 8.1370305 Status: Activated

Placed Date: 11/02/2001 JMF: 00-007-122 Material: Asphalt Concrete Base Course, Type HB - Tons Retrieve

Lot	Lot Construction	Map	Lot Average	Lot Status	Lot Completed
3	Other	N/A	91.9	Does Not Meet Specs - Pay	Complete

Contract: C105505 Placed Date: 11/02/2001 PAR

Contract Line Item: 157 BRG APPR SLAB 605+29.30-L- JMF: 00-007-122 Void

JMF Min. % Comp.: 92.00

Material: Asphalt Concrete Base Course, Type HB - Tons Lot: 3

Approved Producer: Rose Brothers Paving Co., Gaston - AS178 Lot Construction: ☒ Other ☐ New

Paving Contractor: 7 STAR CONSTRUCTION CO., INC.. Lot Completed: ☐ Open ☒ Complete

Map: N/A Lot Average: 91.9

Roadway Technician: 20 Garrett, Jr., Lloyd T Lot Status: Does Not Meet Specs - Pay Adjustment

Plant Technician: 51972 Thompson, Jason

Comment:

Step 22: Click the **PAR** button on the Lot tab. The **Pay Adjustment Recommendation** window will display:

Review Pay Adjustment Recommendation Details (C105505)

Contract: C105505 Contractor: THE LANE CONSTRUCTION CORP. Status: Activated

Description (nickname): I-85 Rehab

Line Item: 157 BRG APPR SLAB 605+29.30-L- UOM: Lump Sum

PAR	Type	Description	Status	Current Owner	Quantity	Percent	Reason
3	QA-2B (Core)		In Process	Downes, III, Rob	.000	0.0000	

General Pay Factors History

Inspected By: Sarrett, Jr., Lloyd T JMF: 00-007-122 Date Placed: 11/02/2001

Inspected Date: 11/02/2001 Lot: 3 Lot Avg: 91.90

Comment:

Forward Approve Close

Step 23: Complete the *Description*, *Quantity*, and *Percent* fields.

Step 24: Select the *Reason* from the drop down menu.

Step 25: Click **Save**. The **Forward** button will now be enabled, to forward to the appropriate person for approval:

Review Pay Adjustment Recommendation Details (C105505)

Contract: C105505 Contractor: THE LANE CONSTRUCTION CORP. Status: Activated

Description (nickname): I-85 Rehab

Line Item: 157 BRG APPR SLAB 605+29.30-L- UOM: Lump Sum

PAR	Type	Description	Status	Current Owner	Quantity	Percent	Reason
3	QA-2B (Core)	Insert description here	In Process	Downes, III, Rob	1.000	90.0000	Does Not Meet Specs

General Pay Factors History

Inspected By: Sarrett, Jr., Lloyd T JMF: 00-007-122 Date Placed: 11/02/2001

Inspected Date: 11/02/2001 Lot: 3 Lot Avg: 91.90

Comment:

Forward Approve Close

Step 26: Click **Forward** button. A Staff List window will display to select the appropriate person to approve:

The Staff List window includes the following search filters:

- Last Name:
- Job Title:
- Status: Active
- Office Category:
- Office Location:
- Retrieve button

The Staff List table contains the following data:

Name	Office Location	Job Title	Security Organization	User ID	Nick Name
Beaver, Gregory T	Division 11 Office	Division Construction En	Division 11	tbeaver	
Blair, Joe E	Division 3 Office	Division Construction En	Division 3	jblair	
Boland, Timothy M	Division 10 Office	Division Construction En	Division 10	tboland	
Capehart, Robert E	Division 1 Office	Division Construction En	Division 1	rcapehart	
Cowan, Mike	Division 7 Office	Division Construction En	Division 7	mcowan	
Eatmon Jr, Bryce E	Division 2 Office	Division Construction En	Division 2	beatmon	
Grissom, Dan	Division 12 Office	Division Construction En	Division 12	dgrissom	
Johnson, Tim	Division 8 Office	Division Construction En	Division 8	tjohnson	
Johnson, Wendi O	Division 4 Office	Division Construction En	Division 4	wjohnson	
Parrott, Tracy N	Division 5 Office	Division Construction En	Division 5	tparrott	
Phillips, Max R	Division 13 Office	Division Construction En	Division 13	mphilips	
Pittman, Tracey C	Division 6 Office	Division Construction En	Division 6	tpittman	
Raulston, Keith E	Division 9 Office	Division Construction En	Division 9	kraulston	
Setzer, Joel B	Division 14 Office	Division Construction En	Division 14	jsetzer	
Wall, John B	Division 7 Office	Division Construction En	Division 7	bwall	

Buttons: OK, Cancel

Step 27: Select the appropriate staff and forward.

Numbering Core Samples

The following numbering methods should be used, based on instructions contained in the NCDOT 2002 Superpave Manual:

QC Core Samples

QC Cores must be numbered consecutively for **each mix type** being placed **each day**. For example, Crew #1 is placing two mix types:

- I 19B - Core tests are numbered 1, 2, 3, etc.
- S 9.5A – Core tests are numbered 1, 2, 3, etc.

Additionally, if the Contractor has more than one paving operation on the same project, the second crew will use a separate series of consecutive numbers followed by the suffix “A”:

- I 19B – Core tests are numbered 1A, 2A, 3A, etc.

- S 9.5A – Core tests are numbered 1A, 2A, 3A, etc.

If a third crew exists, the core tests will be numbered 1B, 2B, 3B, etc.

QC Core samples will begin with #1 each day **for each mix type**.

QC Control Strip Core Samples

QC Control Strip Cores must be numbered consecutively for **each mix type** being placed **each day**. Additionally, the **Core Type** selected in HiCAMS will be “**Control Strip QC**”

For example, Crew #1 is placing two mix types:

- I 19.0B – First control strip: 1, 2, 3, 4, 5 etc.
Second control strip: 6, 7, 8, 9, 10 etc.
- S 9.5A – First Control Strip 1, 2, 3, 4, 5, etc.
Second control strip: 6, 7, 8, 9, 10 etc.

Additionally, if the Contractor has more than one paving operation on the same project, the **second crew** will use a separate series of consecutive numbers followed by the suffix “A”:

- I 19.0 B – First Control Strip 6A, 7A, 8A, 9A, 10A, etc
– Core tests are numbered 11A, 12A, 13A, 14A etc.
- S 9.5A – First Control Strip 6A, 7A, 8A, 9A, 10A, etc
- Second control strip: 11A, 12A, 13A, 14A etc.

If a third crew exists, the core tests will be numbered 1B, 2B, 3B, etc.

QC Check Core Samples

Check core samples should be numbered as follows:

All check core samples (average of 3 checks) will be identified in HiCAMS with the same number as the original core sample:

- If original core sample #8 is in question, then the **average** of the three checks will be used to enter into HiCAMS, with the check core number entered as 8.

Retrieve/review existing Asphalt Core QC Lot or Sample

Step 1: Follow **Steps 1-5** in the section above “**Enter an Asphalt Core QC Sample**”.

Step 2: All existing Lots for the JMF on the Placed Date indicated will be listed:


Step 3: Select the **Results** tab to view the core test results:

Include in Avg.	Core	Core Type	Station From	Station Fraction	Location	% Comp.
<input checked="" type="checkbox"/>	1 QC		32 +	00 RT LN		92.7
<input checked="" type="checkbox"/>	2 QC		00 +	80 LT		91.8
<input checked="" type="checkbox"/>	3 QC		4 +	05 LT		91.5
<input checked="" type="checkbox"/>	4 QC		20 +	55 LT		92.4
<input checked="" type="checkbox"/>	5 QC		26 +	00 LT		91.2

Delete an existing Asphalt Core QC Sample

Step 1: Follow **Steps 1-6** in the section above **Retrieve/Review an existing Asphalt Core QC Sample**.

Step 2: Place your cursor on the line with the core you wish to delete.

Step 3: Click on the “Delete” icon. 

Step 4: Delete other QC cores as desired.

Void an existing Asphalt Core QC Lot

Step 1: Follow **Steps 1-6** in the section above **Retrieve/Review an existing Asphalt Core QC Sample**.

Step 2: Place your cursor on the line with the core you wish to void.

Note: *If the lot has been set to “Complete” and is in failing status, only the Pavement Construction staff can void it; therefore the button will be disabled.*

Step 3: Click the **Void** button.

Step 4: Void other Nuclear QC lots as desired.